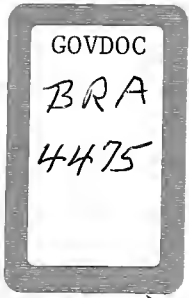
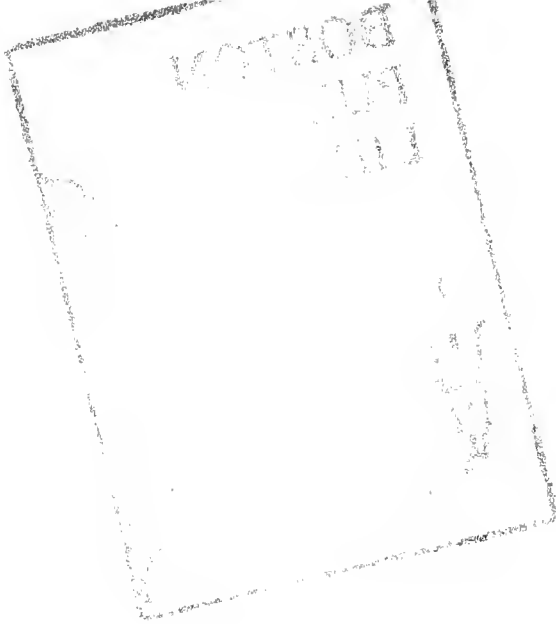


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A REPORT ON THE PROPOSED RECONSTRUCTION OF  
WASHINGTON STREET, JAMAICA PLAIN  
(FOREST HILLS TO EGLESTON SQUARE)

Prepared by:  
Frederic R. Harris, Inc.  
Segal/DiSarcina Associates, Inc.



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Date:             December 30, 1988

The MBTA's removal of the Orange Line elevated transit structure from Washington Street has necessitated the reconstruction of the street and sidewalks. Two options are being considered for the typical section of the street within the existing right of way:

- a.) a 40 foot pavement with two 10 foot sidewalks  
    (the existing condition)
- b.) a 44 foot pavement with two 8 foot sidewalks  
    (a proposed alternative)

Under the (A) scenario, the 40 foot pavement would be divided by a painted, double yellow line into a 12 foot travel lane and an 8 foot parking lane in each direction.

Under the (B) scenario, the 44 foot pavement would be divided by a painted, double yellow line into a 12 foot travel lane and a 10 foot parking lane in each direction.

Under both scenarios, it is likely that the painted, double yellow line will be the only painted lane markings; i.e. the parking lanes will not be striped. However, there may be some special locations where parking stalls may be specifically delineated.

#### **TRAFFIC VOLUMES**

In October 1988, Frederic R. Harris prepared a "Washington Street Traffic Improvements Study" report for the MBTA which contains an assessment of traffic volumes, preliminary design sketches for the major intersections along Washington Street and other relevant information. (Draft copies of this report were delivered to the Boston Transportation Department.)

This report includes some existing 17 hour (7:00am to 6:0pm) "ADT" traffic volume counts for several sections of Washington Street southerly of Egelston Square. The counts vary from about 6,400 to 9,800 two-way vehicles which, if converted to an all-day, 24 hour basis would likely be in the 6,800 to 10,300 vehicle range. On an ADT basis, this range of traffic volumes can generally be accommodated with one travel lane in each direction, assuming that intersections, particularly those with traffic signals, can be properly designed.



## **INTERSECTION TRAFFIC VOLUMES**

The traffic report provides AM and PM peak hour turning movements at six intersections on Washington Street from McBride Street to Columbus Avenue (Egleston Square). Other than the Egleston Square intersection, the traffic volumes on the side or cross streets are relatively small; in the range of 100 to 200 vehicles per hour. The combination of Washington Street approach volumes (northbound and southbound) range from 700 to 1,000 vehicles per hour, with the predominant portion being a northbound flow in the morning and a southbound flow in the evening.

These ranges of intersection volumes could be accommodated within a single travel lane in each direction on Washington Street except where there are significant percentages of turning movements from Washington Street to the cross streets. The presence of a two lane approach on Washington Street at these intersections with high turning movements would provide turning vehicles with the ability to wait in their own lane without unduly impeding other traffic flows. This would allow traffic signal phasing and timing to be efficiently designed for both pedestrians and vehicles.

The Egleston Square intersection of Washington Street with Columbus Avenue is a major intersection wherein both the approaches of Washington Street and Columbus Avenue carry significant amounts of traffic, much of it locally generated and destined. In addition, the westerly leg of Columbus Avenue enters the intersection at a 45 degree angle further complicating sight distances and turning movements. At this intersection, consideration should be given to providing 2 travel lanes on all approaches, at least during the highest peak hours for each leg. Because of the businesses at this intersection, parking cannot be eliminated unless alternative parking is provided that is satisfactory to the affected merchants.

## **OTHER STREET OPERATIONS**

As noted before, only one travel lane on Washington Street in each direction is normally required except at signalized intersections with heavy turning movements. On-street parking to serve local needs and abutting commercial properties will be allowed. While serving inter-neighborhood travel needs, Washington Street also serves the neighborhoods accessed by the many intersecting cross streets.

Because Washington serves many local commercial abutters, there will be times when delivery vehicles will be temporarily parked, either in the parking lanes or beside parked vehicles, to make deliveries to abutting properties. When this occurs, the ability of both the northbound and southbound travel lanes to function properly will be severely constrained. In addition, there will be times when snow is piled up at the curb line, further reducing the effective width of the street.

## **PAVEMENT AND SIDEWALK WIDTHS**

In this area, Washington Street has a right-of-way of 60 feet, with a 40 foot existing roadway pavement width and a 10 foot sidewalk on either side. Every 50 ft, at the steel columns of the elevated, the sidewalk is reduced to 8 feet.



Since Washington Street is the major street serving local needs in this area and because it has only one travel lane in each direction, the travel lane should be at least 12 feet wide. With only one travel lane in each direction, 12 foot travel lanes provide only 24 total feet of travel pavement. If a vehicle breakdown were to occur, there would only be some 17 feet or so (24 feet less 7 feet for the disabled vehicle) remaining to accommodate both travel directions. This is a very poor operating condition.

While there are many texts and policies which discuss recommended pavement widths for streets such as Washington Street, all texts recommend a 12 foot travel lane. These texts note that a vehicle parked some 6 to 12 inches from the curb line will occupy some 7 feet or more of pavement width and that the total width of a parking lane should be some 10 to 12 feet wide. While a 12 foot parking lane may be excessively wide, a 10 foot parking lane allows for up to 3 feet for a person to open the door and safely exit the vehicle without having to step into the travel lane or to have the door extend into the travel lane.

With a 12 foot travel lane and a 10 foot parking lane, a total of 22 feet of pavement is provided in each direction. While this provides for a better cross section along the street in general, it also allows for two, 11 foot approach lanes on Washington Street at the signalized intersections should this treatment be required and recommended for turning movements.

These advantages must be weighted against the reduction in width of the sidewalks from 10 feet to 8 feet, which is only one foot more than the minimum 7 foot requirement of the city of Boston. The 10 foot sidewalks will provide more space for landscaping .

## PEDESTRIAN ISSUES

Chapter 13 of the "Highway Capacity Manual", 1985, discusses pedestrian volumes in a manner similar to that of vehicle traffic volumes. The vehicle "level of service" (LOS) concept has been extended to pedestrian volumes with the following generalized relationship.

LOS	$\frac{\text{FLOW RATE}}{(\text{peds/hour})}$
A	120
B	420
C	600
D	900
E	1500
F	n.a.

As part of the analysis of the Egelston Square intersection of Washington Street with Columbus Avenue, pedestrian counts were made for all crosswalks for the morning and evening peak periods. The largest one-hour pedestrian count was 52 pedestrians per hour crossing the easterly side of Columbus Avenue during the evening peak hour. While it is noted that this pedestrian flow must cross only during specified time periods during the traffic signal cycle, it appears that the existing pedestrian volumes are not within critical pedestrian levels of service.

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With respect to the issue of the width of Washington Street, pedestrians would be required to cross a street width of either 40 or 44 feet. While there is some variability in computing pedestrian WALK times, typically the amount of walk time (in seconds) is 7 seconds plus the street width divided by 3 feet per second. For a 40 and 44 foot street width, the minimum pedestrian time would be:

<u>Street Width</u>	<u>Time</u>
40 feet	20 seconds
44 feet	22 seconds

Thus, the net difference in probable minimum pedestrian times allowed for either the 40 or 44 foot pavement widths is likely to be about 2 seconds, an amount which can be accommodated within the signal timing plans for the Washington Street intersections.

## CONCLUSIONS

While the current pavement width of 40 feet (with two 10 foot sidewalks) is deemed minimally adequate, the provision of a 44 foot pavement width (with two 8 foot sidewalks) would provide for a more efficient street operation. The increased width will allow for better operations at signalized intersections and allow Washington Street to better function during times when there are delays due to vehicle breakdowns, temporary double parking or loading and during conditions when snow reduces the effective width of the street.

Weighed against this increased roadway efficiency would be the reduced width of sidewalk and reduced landscaping amenities. Also, before any parking is eliminated or regulated, alternative parking must be provided and input obtained from the abutters.

